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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,039

Applicant(s)

TOKARSKI ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/3/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/12/04; 12/3/04</u> | 6) <input type="checkbox"/> Other: _____ |

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-17 and 22-25, drawn to (a) organophoto-receptors, (b) electrophotographic image apparatuses, and (c) azine compounds, classified, respectively, in class 430, subclass 72, class 399, subclass 159, and class 564, subclass 249.

II. Claims 18-21, drawn to electrophotographic imaging processes, classified in class 430, subclass 126.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I(a) (organophotoreceptors) and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process, such as a process comprising the steps of charging the organophotoreceptor, imagewise exposing the charged organophotoreceptor to form an electrostatic latent image,

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developing the latent image with a toner, fixing the developed image on the organophotoreceptor, and laminating a clear coversheet on the fixed toned image to form a permanent image. This process does not require transferring the toned image to a substrate as required in the process of Group II.

Inventions II and I(b) (apparatuses) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, such as the process described supra, which does not require transferring the toned image to a substrate as required by the process in Group II.

Inventions I(c) (azine compounds) and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions and different effects. Invention II is drawn to a process that comprises the steps of charging and imagewise exposing an organophotoreceptor

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to form a charge pattern, developing the charge pattern with a toner to form a toner image, and transferring the toner image to a substrate. Invention I(c) (azine compounds) is drawn to a compound which can be used in compositions other than an organophotoreceptor, such as a charge transport material in an electroluminescence device.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Kam Law (Reg. No. 44,205) on Feb. 28, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-17 and 22-25. Affirmation of this election must be made by applicants in replying to this Office action.

Claims 18-21 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be

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amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. Applicants' claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 1-17 and 22-25 of this application.

Provisional Application 60/483,726 (Application'726) does not provide an adequate written description of the following subject matter recited in the instant claims.

(1) The generic formula recited in instant claims 1, 9, and 22 for the following reasons:

(1a) The groups R_1 to R_4 "comprise, each independently . . . an alkenyl group . . . a heterocyclic group, or a part of a ring group" recited in instant claims 1, 9, and 22.

Application'726 discloses that the R groups "are, independently be an alkyl group, an alkaryl group, or an aryl group" (emphasis added). Application'756, page 2, line 12-13; page 3, lines 14-15; page 6, line 22-23; and page 15, lines 7-8.

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(1b) The groups Y and Y' "comprise each independently, a (disubstituted)methylene group" recited in instant claims 1, 9, and 22.

Application'756 discloses that "Y and Y' are, independently, a 9-fluorenyl group." Application'756, page 2, lines 13-14; page 3, lines 15-16; page 6, line 23-24; and page 15, lines 8-10.

(1c) The group "Z is a linking group" recited in instant claims 1, 9, and 22.

Application'756 discloses that "Z is a divalent linking group having the formula $-(CH_2)_m-$, branched or linear, where m is an integer between 1 and 30, inclusive, and one or more of the methylene groups may be replaced by O, S, a carbonyl group, urethane, urea, an ester group, a divalent aromatic group . . . a divalent heterocyclic group . . . a CHR_6 group, or a CR_7R_8 group where . . . R_6 , R_7 , and R_8 are, independently, hydrogen, hydroxy [sic], thiol, an alkoxy group, an alkyl group, an aryl group, or a part of a cyclic ring." Application'756, page 2, lines 14-20; page 3, lines 16-22; page 6, line 24, to page 7, line 6; and page 15, lines 9-15.

(2) The generic formula defined in instant dependent claims 4, 16, and 23, where the groups "X and X' are, each independently, a C_6H_3 group."

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Application'726 exemplifies particular compounds where the X groups are "C₆H₃." Application'726, pages 15-17. However, Application'726 does not disclose that the X groups in the generic formula are "C₆H₃."

(3) The generic formula in instant claims 5, 13, and 24, where the "disubstituted)methylene group" is a 10H-anthracene-9-ylidene group or a diarylmethane group. The generic formula in instant claims 6 and 14 where the "disubstituted)methylene group" is a (di-aromatic)methylene group.

As discussed in item (1b) above, Application'726 discloses that "Y and Y' are, independently, a 9-fluorenyl group."

(4) The generic formula where Z is defined as in instant claims 8, 17, and 25.

As set forth in item (1c), Application'756 does not recognize that the integer m can be "20" as recited in instant claims 8, 17, and 25. Nor does Application'756 disclose that one or more of the methylene groups can be replaced by N, C, B, P, O=S=O, an NR₆ group, or a "CR₇" where R₆ and R₇ are, independently, a bond, H, hydroxyl, thiol, carboxyl, an amino group, an alkyl group, an alkenyl group, a heterocyclic group, an aromatic group, or a part of a ring. Nor does Application'756 disclose that one or more of the methylene groups can be replaced by a CR₈R₉ group where R₈ and R₉ are,

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independently, a bond, carboxyl, an amino group, an alkenyl group, or a heterocyclic group.

(5) The "light imaging component" in the apparatus recited in instant claim 9.

Application'726 does not disclose an apparatus comprising a light imaging component.

(6) The apparatus recited in instant claims 9-16 is broader than the apparatus disclosed in Application'726. Application'726 requires that the imaging apparatus comprise "a plurality of support rollers," which is not recited in instant claims 9-16. See Application'726, page 2, line 25.

(7) The "belt" in instant claim 15.

Application'726 at page 5, line 15, discloses a "flexible belt." The term "belt" is broader than the disclosed flexible belt in Application'756 because it encompasses belts that are not flexible.

Accordingly, the subject matter recited in instant claims 1-17 and 22-25 is accorded benefit of the filing date, Jan. 16, 2004, of the instant application.

6. The abstract of the disclosure is objected to because it is not limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

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Applicants are reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

7. The disclosure is objected to because of the following informalities:

(1) The specification discloses that when Z is $-(CH_2)_m-$ where m is an integer between 1 and 20, inclusive, one or more of the methylene groups can be replaced by N, C, B, P, or a "CR₇." See the specification, page 3, lines 7-12, page 8, lines 21-26, and page 22, line 4-9. However, it is not clear how a methylene group, which is divalent, can be replaced with groups that are not divalent.

(2) The specification further discloses that when Z is $-(CH_2)_m-$ where m is an integer between 1 and 20, inclusive, one or more of the methylene groups can be replaced by a NR₆ group, a

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"CR₇" group, or a CR₈R₉ group, where the R groups can be a bond. See the specification, page 3, lines 7-12, page 8, lines 21-26, and page 22, line 4-9. However, it is not clear to what the R groups in the groups are bonded.

(3) The specification also discloses that when Z is -(CH₂)_m- where m is an integer between 1 and 20, inclusive, one or more of the methylene groups can be replaced by a NR₆ group, a "CR₇" or a CR₈R₉ group, where the R groups can be a part of a ring group. See the specification, page 3, lines 7-12, page 8, lines 21-26, and page 22, line 4-9. However, it is not clear what is meant by the term "part of a ring group." The specification does not define said group.

(4) The use of trademarks, e.g., Calgon [sic: CALGON] at page 12, line 14, has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

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Appropriate correction is required.

8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In claims 4, 16, and 23, the recitation, "X and X' are, each independently, a C₆H₃ group" lacks antecedent basis in the specification. See pages 22-24, of the specification, which discloses particular compounds where the X groups are "C₆H₃." However, the specification does not disclose that the X groups in the generic formula recited in instant claims 4, 16, and 23 are "C₆H₃."

(2) In claim 15, the term "belt" lacks antecedent basis in the specification. See page 3, line 17, of the specification, which discloses a "flexible belt." The term "belt" is broader than the disclosed flexible belt because it encompasses belts that are not flexible.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-17 and 22-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Instant claims 1, 9, and 22 are indefinite in the phrase "R₁, R₂, R₃, and R₄ comprise, each independently . . . a part of a ring group" because it is not clear what is meant by the term "a part of a ring group." The instant specification does not define said group.

Instant claims 8, 17, and 25 are indefinite in the phrase "Z has the formula -(CH₂)_m- where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is optionally replaced by a . . . N, C, B, P, . . . a CR₇ . . ." because it is not clear how a methylene group, which is divalent, can be replaced with groups that are not divalent.

Instant claims 8, 17, and 25 are also indefinite in the phrase "Z has the formula -(CH₂)_m- where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is optionally replaced by a . . . an NR₆ group, a CR₇ or a CR₈R₉ group" where the R groups can be "a bond" because it is not clear to what the R groups in the groups are bonded.

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Instant claims 8, 17, and 25 are further indefinite in the phrase "Z has the formula $-(CH_2)_m-$ where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is optionally replaced by a . . . an NR_6 group, a CR_7 or a CR_8R_9 group" where the R groups can be "a part of a ring group" because it is not clear what is meant by the term "a part of a ring group." The instant specification does not define said group.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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13. Claims 1-17 and 22-25 are provisionally rejected under 35 U.S.C. 103(a) as being obvious over copending Application No. 10/663,971 (Application'971) which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e) if published or patented. This provisional rejection under 35 U.S.C. 103(a) is based upon a presumption of future publication or patenting of the conflicting application.

Application'971 has a filing date of Sep. 16, 2003, which is prior to the filing date, Jan. 16, 2004, of the instant application. See paragraph 5, supra.

This provisional rejection might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by a showing of a date of invention for the instant application prior to the effective U.S. filing date of the copending application under 37 CFR 1.131. For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(1)(1) and § 706.02(1)(2).

Application'971 discloses an electrophotographic organophotoreceptor and an electrophotographic imaging apparatus comprising said organophotoreceptor. The apparatus further comprises a light imaging component and a toner disperser as

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recited in instant claims 9 and 10. Page 3, lines 14-17. The organophotoreceptor comprises an electrically conductive substrate and a photoconductive element, which can comprise a charge generation layer comprising a binder resin and a charge generating material, and a charge transport layer comprising a binder resin and a charge transport material. Page 2, line 21, to page 3, line 7; and page 6, lines 6-9. The multi-layered photoconductive element meets the layer structure recited in instant claim 7. Application'971 at page 8, lines 19-21, discloses that the organophotoreceptor may comprise a substrate that meets the limitation recited in instant claim 15. Application'971 further discloses that the photoconductive layer may further comprise an electron transport material, which meets the limitations recited in instant claims 2, 3, 11, and 12. Page 10, lines 18-19.

Application'971 teaches that the charge transport material can be the particular compound of formulas (4) or (5) disclosed at page 21. Compounds (4) and (5) comprise two azine groups. The compounds meet the compositional limitations of the formula recited in instant claims 1, 4-6, 8, 9, 13, 14, 16, 17, and 22-25, except for the groups Y and Y' being a (disubstituted)methylene group as recited in the instant claims. Compounds (4) and (5) are represented by the formula recited in

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the instant claims when the groups X and X' are tri-substituted benzene groups, the R groups are methyl, and the linking group Z is of the formula $-(CH_2)_m-$ recited in instant claims 8, 17, and 25, where one or more of the methylene groups is replaced by a O, S, a heterocyclic group, a phenylene group, or CR_8R_9 group where R_8 is hydrogen and R_9 is hydroxyl. In compounds (4) and (5), the groups Y and Y' of the formula recited in the instant claims are represented by the group 9-ethyl-3-carbazolyl-CH=. The methine carbon (-CH=) is not disubstituted as required in the instant claims.

However, Application'971 discloses that compounds (4) and (5) represent the formula disclosed at page 19, line 15, to page 20, line 4, of Application'971. Application'971 teaches that the carbon in the methine group is substituted with the groups Y and R_1 , i.e., $=C(R)(Y)$. The group Y is a (N,N-disubstituted)arylamine, e.g., 9-ethyl-3-carbazolyl, as shown in compounds (4) and (5). In addition to hydrogen, the group R_1 can equally be an alkyl group, an alkaryl group or an aryl group. Page 19, lines 19-20. The groups Y and R_1 in Application'971 meet the limitation "(disubstituted)methylene group recited in instant claims 1, 9, and 22 when the group Y is 9-ethyl-3-carbazolyl and group R_1 is an alkyl group, an alkaryl group or an aryl group. The groups Y and R_1 meet the limitation

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"(diaromatic)methylene group" recited in instant claims 6 and 14, and the limitation "diarylmethylene group" recited in instant claims 5, 13, and 24, when the group Y is 9-ethyl-3-carbazolyl and the group R₁ is an alkaryl group or an aryl group. The group 9-ethyl-3-carbazolyl meets the term "aryl" in the term "diarylmethylene group" recited in instant claims 5, 13, and 24, because it is a substituted phenyl group. See the instant specification at page 10, lines 13-17, which discloses that "the term group indicates that the generically recited chemical entity (e.g. . . . diarylmethylene group) may have any substituent thereon which is consistent with the bond structure of that group."

According to Application'971, when the charge transport compound of the formula disclosed at pages 19-20 is used as the charge transport material in an organophotoreceptor, the organophotoreceptor has good electrostatic properties, such as high V_{acc} and low V_{dis}, and mechanical strength. Page 2, lines 19-20, and page 3, lines 29-31. The organophotoreceptors "can be used successfully with liquid toners to provide high quality images. The high quality images can be maintained after repeating cycling." Page 3, line 31, to page 4, line 2. The later disclosed properties are the same properties sought by applicants. See the instant specification, page 4, lines 6-8.

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It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Application'971, to replace the hydrogen atom attached to the methine carbon in either compounds (4) or (5) with an alkyl, an alkaryl group, or an aryl group as taught by Application'971, such that the resultant compounds are within the compositional limitations of the formula recited in the instant claims, and to use the resultant compound as the charge transport material in the organophotoreceptor disclosed by Application'971. That person would have had a reasonable expectation of successfully obtaining an organophotoreceptor and an electrophotographic imaging apparatus that can be used successfully with liquid toners to provide high quality images, which can be maintained after repeating cycling as taught by Application'971.

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. The following obviousness-type double patenting rejections are provisional because the conflicting claims have not in fact been patented.

16. Claims 1-6, 8-14, 16, 17, and 22-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of copending Application No. 10/663,971 (Application'971).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter recited in Application'971 renders obvious the subject matter recited in the instant claims.

Reference claim 10, which depends from reference claim 1, recites an organophotoreceptor comprising a photoconductive element and an electrically conductive substrate, where the photoconductive element comprises a charge generation material and a charge transport compound represented by either the third or fourth formula recited in reference claim 10. Reference claim 11, which depends from reference claim 1, requires that the photoconductive element further comprise an electron

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transport compound, which meets the second charge transport limitation recited in instant claims 2 and 3. Reference claim 16, which depends from reference claim 13, recites an electrophotographic imaging apparatus comprising a light imaging component and an organophotoreceptor comprising a photoconductive element and an electrically conductive substrate, where the photoconductive element comprises a charge generation material and a charge transport compound represented by either the third or forth formula recite in reference claim 16. Reference claim 19, which depends from reference claim 13, requires that the apparatus further comprise liquid toner disperser, which meets the toner disperser component recited in instant claim 10. Reference claim 17, which depends from reference claim 13, requires that the photoconductive element further comprise an electron transport compound, which meets the second charge transport limitation recited in instant claims 11 and 12. Reference claim 30, which depends from reference claim 27, recites a charge transport compound represented by the third or fourth formula recited in reference claim 30.

The charge transport compounds of the third and fourth formula comprise two azine groups. The compounds meet the compositional limitations of the formula recited in instant

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claims 1, 4-6, 8, 9, 13, 14, 16, 17, and 22-25, except for the groups Y and Y' being a (disubstituted)methylene group as recited in the instant claims. The compounds of the third and fourth formula are represented by the formula recited in the instant claims when the groups X and X' are tri-substituted benzene groups, the R groups are methyl, and the linking group Z is of the formula $-(CH_2)_m-$ recited in instant claims 8, 17, and 25, where one or more of the methylene groups is replaced by a O, S, a heterocyclic group, a phenylene group, or CR_8R_9 group where R_8 is hydrogen and R_9 is hydroxyl. In the compounds represented by the third or fourth formula, the groups Y and Y' of the formula recited in the instant claims are represented by the group 9-ethyl-3-carbazolyl-CH=. The methine carbon ($-CH=$) is not disubstituted as required in the instant claims.

However, the compounds of the third and fourth formula represent the formula recited in reference claims 1, 13, and 27, from which claims 10, 16, and 30 depend, respectively.

Reference claims 1, 13, and 27 recite that the carbon in the methine group is substituted with the groups Y and R_1 , i.e., $=C(R)(Y)$. The group Y is a (N,N-disubstituted)arylamine, e.g., 9-ethyl-3-carbazolyl, as shown in the compounds of the third and fourth formula recited in reference claims 10, 16, and 30. In addition to hydrogen, the group R_1 can equally be an alkyl group,

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an alkaryl group or an aryl group. The groups Y and R₁ in Application'971 meet the limitation "(disubstituted)methylene group recited in instant claims 1, 9, and 22 when the group Y is 9-ethyl-3-carbazolyl and group R₁ is an alkyl group, an alkaryl group or an aryl group. The groups Y and R₁ meet the limitation "(diaromatic)methylene group" recited in instant claims 6 and 14, and the limitation "diarylmethylene group" recited in instant claims 5, 13, and 24, when the group Y is 9-ethyl-3-carbazolyl and the group R₁ is an alkaryl group or an aryl group. The group 9-ethyl-3-carbazolyl meets the term "aryl" in the term "diarylmethylene group" recited in instant claims 5, 13, and 24, because it is a substituted phenyl group. See the instant specification at page 10, lines 13-17, which discloses that "the term group indicates that the generically recited chemical entity (e.g. . . . diarylmethylene group) may have any substituent thereon which is consistent with the bond structure of that group."

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in the claims of Application'971, to replace the hydrogen atom attached to the methine carbon in the compound represented by the third or fourth formula recited in reference claims 10, 16, and 30 with an alkyl, an alkaryl group, or an aryl group, such that the

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resultant compounds are within the compositional limitations of the formula recited in the instant claims, and to use the resultant compound as the charge transport material in the organophotoreceptor and in the imaging apparatus recited in the claims of Application'971. That person would have had a reasonable expectation of successfully obtaining a charge transport compound that is capable of transporting charges in an organophotoreceptor, and an organophotoreceptor and an electrophotographic imaging apparatus that are capable of being used in an electrophotographic process to provide toned images.

17. Claims 7 and 15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of copending Application'971 in view of Diamond, Handbook of Imaging Materials, pp. 395-396.

The subject matter recited in the claims of Application'971 renders obvious the organophotoreceptor and the electrophotographic imaging apparatus as described in paragraph 16 above, which is incorporated herein by reference. In addition, reference claims 12 and 18, which depend from reference claims 1 and 13, respectively, further require that

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the photoconductive layer in the organophotoreceptor further comprise a binder.

The reference claims of Application'971 do not recite that the photoconductive element comprises a charge generation layer comprising the charge generation material and a polymeric binder and a charge transport layer comprising the charge transport compound and a polymeric binder as recited in instant claim 7. Nor do the claims recite that the organophotoreceptor comprises a flexible belt or a drum to support the electrically conductive substrate as recited in instant claim 15.

However, multi-layered photoconductive elements and the use of flexible belt or drum in organophotoreceptors are well known in the electrophotographic arts. Diamond discloses that photoreceptor fabrication involves the sequential application of one or more layers. Page 395, lines 10-11. Figure 9.7 in Diamond illustrates a "typical photoreceptor cross section." The photoreceptor in Figure 9.7 comprises a charge generation layer and a charge transport layer. Diamond discloses that the photoconductive layer can equally be a single layer that functions as both a charge generation and a charge transport layer. Page 395, lines 25-27. Diamond further discloses that the support of the photoreceptor can be a metal cylinder, i.e. a

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drum, or a flexible belt. Page 395, lines 12-13, and page 396, lines 4-9.

It would have been obvious for a person having ordinary skill in the art, in view of teachings in Diamond and the subject matter recited in the reference claims of Application'971, to make and use a photoconductive element comprising a charge generation layer comprising the charge generation material and a polymeric binder and a charge transport layer comprising the charge transport compound and a polymeric binder as recited in instant claim 7, and to use a metal cylinder or a flexible belt to support the electrically conductive substrate in the organophotoreceptor rendered obvious over the claimed subject matter recited in Application'971. That person would have had a reasonable expectation of successfully obtaining an organophotoreceptor and an electrophotographic imaging apparatus that are capable of being used in an electrophotographic process to produce toned images.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

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Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD
Mar. 5, 2005

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